Increase productivity and uptime

PowerFlex[®] 755T-series AC drives help deliver flexible, high-performance motor control for demanding industrial applications



AND BERTH

Powerful motor control for demanding industrial applications

Boost your plant productivity

Industrial manufacturers meet their biggest challenges head-on with PowerFlex® 755T-series variable frequency drives with TotalFORCE® technology:

- Increase plant productivity
- Minimize downtime
- Reduce energy costs

Whatever your industry – and whether you're managing legacy equipment and systems or designing a new plant – smart motor control solutions from Rockwell Automation can help meet your productivity goals.

PowerFlex drives make the most of your assets and production time

With patented TotalFORCE technology, you get the flexibility and high-performance motor control that meets a wide range of application requirements.

Add real-time operational intelligence along with automated application commissioning and optimization and this portfolio will keep your operations running at optimal performance. NEW **PowerFlex 755TS** drives offer more capabilities designed to meet your application requirements. It's the first six-pulse drive with TotalFORCE technology that adds flexible, high-performance motor control, real-time operational intelligence and automated application commissioning and optimization.

PowerFlex 755TL drives deliver harmonic mitigation and power factor correction by using active front end technology.

PowerFlex 755TR drives use regenerative active front end technology to deliver 100% energy back to the incoming supply. Plus, provide harmonic mitigation and power factor correction.

PowerFlex 755TM drives deliver optimized energy consumption and reduced installation footprint in multi-motor applications using a common DC bus with regenerative and non-regenerative options.

TotalFORCE technology

Boosts productivity out of the box

Turn your drive into a strategic advantage by choosing PowerFlex drives with TotalFORCE technology that can help you increase throughput, improve uptime and streamline your operations.

Total control over your motors

PowerFlex 755T-series drives combine precise velocity, torque and position control with advanced self-monitoring capabilities for superior electric motor control across the toughest industrial applications.

Help reduce startup and commissioning time (without complex code or the need for drive tuning experts). This next generation drive automatically responds to application load and mechanical changes to improve electrical efficiency and mechanical system reliability.

Total visibility into the health of drive components

Help reduce costly unplanned downtime by planning ahead with predictive maintenance. Real-time operational intelligence calculates the expected life of critical drive components based on actual usage and environment, alerting you to problems before they occur so you can act.

Total command over your drives in one platform

Use the same control architecture and network interface for PowerFlex 755T-series low voltage drives and PowerFlex 6000T medium voltage drives to simplify your integration and operating experience and reduce on-site spare parts.

Time-saving design and functionality

Simplify installation and maintenance

PowerFlex drives are built for easier installation, commissioning and maintenance. The design provides convenient access to compact components that can be easily installed, removed and serviced. The slot-based hardware architecture gives you the flexibility to select up to five option cards to suit your application for I/O, communications, safety and feedback.

When space is a premium

PowerFlex 755TS six-pulse drives provide more power in a smaller footprint, getting the most out of your space and investment. And with panel-mount solutions up to 500 Hp (355 kW), it's easy to design, install and meet premium space requirements.

Our active front end drives offer compact panel mount options up to 200 Hp (132 kW) and cabinet solutions up to 6000 Hp (4550 kW) with high power density. Plus, PowerFlex 755TL, TR and TM drives are easy to install, repair and replace.

- Power wiring can stay connected while power modules are easily rolled-out for service
- · Convenient access to key components
- Optional entry/exit wiring bays allow cable access through the top of the cabinet



Support when you need it

Our highly experienced field service professionals supplement your resources, help improve equipment operation and ensure long-term performance.

Modernization and migration services

Turnkey engineering services help you move from legacy platforms to our newest technology.

Drive startup

Field service professionals inspect and verify drive installation to factory standards, tune drives and adjust parameters to your application. Plus, commission drives to help ensure correct operation and optimal performance.

Maintenance services

Annual or custom agreements help extend the lifecycle of your hardware and optimize its performance.

"Easy configuration, integration and visualization in the FactoryTalk Studio 5000° design environment"

More simplified drive configuration and programming

PowerFlex drives make configuration and programming fast and uncomplicated with easy-to-use software packages and tools.

FactoryTalk° Studio 5000 Logix Designer° environment

- Achieve premier integration with Logix programmable
 automation controllers
- One development environment to configure and program your entire control and device system
- Data associated with the drive is automatically generated to ease configuration and help eliminate mismatch errors
- Easy access to system, machine and diagnostics data

Connected Components Workbench[™] software

• Free software gets your drives up and running with an intuitive interface and startup wizards

Local or remote PowerFlex HMIs

NEW Integrated motion

Simplified system configuration, easier synchronization, faster response

Reduce complexity and save valuable engineering time by using the power of Studio 5000 software to program integrated motion commands with PowerFlex 755T-series drives and induction motors. Simplify integration using a single software package with common instructions for both PowerFlex VFDs and Kinetix[®] servo drives.

- Streamline your machine design by using preconfigured commands to coordinate motion
- Powerful diagnostics, including time-stamped events, help you identify and resolve problems more quickly
- From simple electronic gearing to electronic camming, synchronization is accomplished easily over the network
- The Logix controller maintains the drive's parameters and resets them each time it connects, creating inherent drive replacement that reduces downtime
- Integrated motion is compatible with adaptive control and predictive maintenance
- Available in six-pulse drives or active front end drives with low harmonic and regenerative capabilities



Built-in control tools

PowerFlex 755T-series drives come standard with DeviceLogix[™] technology, a built-in control capability for local application and supplementary supervisory control.

Ideally suited to enhance productivity for standalone applications, DeviceLogix is designed for applications that require a quick and localized response to input events polling times. Plus, processing logic locally makes troubleshooting easier and processes can continue to run in the event of a network interruption.

DeviceLogix uses a simple programming tool that supports function block and ladder editors and is accessible via FactoryTalk[®] Studio 5000[®] add on profiles. DeviceLogix technology can be configured to operate under specific situations – so the created program runs only if the logic has been enabled and unswitched power is present. And by using built-in DeviceLogix capabilities, users help eliminate redundant firmware.

A few of the applications:

- Speed reference selection
- Complex math function
- Signal scaling
- Fault handling
- Selector switch functions
- Material counting for batch processes
- Encoder functions
- Signal conditioning
- Temperature control
- Motor control applications

Adaptive control increases productivity, reduces mechanical wear and downtime

Help increase machine reliability and performance

Adaptive control is a key component of TotalFORCE technology to help improve your productivity.

Adaptive control is the combination of Adaptive Tuning, Load Observer and Bus Observer working together to reduce commissioning time at startup, and monitor your machine characteristics as your equipment operates.

As your machine's operating characteristics change over time, PowerFlex 755T-series drives automatically adjust to compensate for these changes to maintain productivity. This advanced capability helps reduce mechanical wear and keeps your operation running at optimal production.

- Reduce startup time needed for tuning without complex code or the need for drive-tuning experts
- Monitor real-time drive and system performance characteristics and adapt as necessary
- Identify potentially harmful resonance and vibration conditions and suppress the resonance for continued operation
- Automatically monitor and compensate for changes in inertia and for motor-to-load, providing for higher throughput in your process, regardless of load changes or external disturbances



We'll help with the heavy lifting

If your work involves cranes, hoists or the lifting of any type of load, you understand the unique challenges posed by these types of applications. Safety, reliability and productivity are always on your mind. Fortunately, Allen-Bradley^{*} drives are specifically designed to make your job easier.

Put these PowerFlex drive capabilities to work and invest in improved performance:

- TorqProve[™] Control helps verify control of a load in lifting applications
- Anti-sway capability is designed to improve safety and efficiency by reducing the swinging of a moving load
- Regeneration enables a drive to put energy back on the incoming line, providing a braking solution that is far more energy efficient than resistive braking

Predictive technology helps uptime

Proactive diagnostic data

PowerFlex 755T-series drives offer a proactive approach in receiving diagnostic data, where you can continuously monitor the health of your drive and compare the current performance to the application settings driven by our patented TotalFORCE technology.

Real-time monitoring and on-board predictive analytics can help reduce unplanned downtime and develop a resource-optimized maintenance strategy.

Predictive analytics help minimize downtime

PowerFlex 755T-series drives notify operators immediately about issues that might compromise drive or motor health such as:

- Blown fuses
- Components approaching end of life
- Increasing temperatures out of normal operating range

Using patented predictive maintenance models and algorithms, PowerFlex 755T-series drives have built-in capabilities to improve productivity.

- A DC bus conditioner helps protect power components by minimizing DC bus voltage transients
- The voltage boost feature enables full voltage to the motor, even when operating on a reduced incoming line
- Thermal manager monitors temperature and helps manage critical operating conditions that can result in thermal overloads of the products
- Drives can operate two types of incoming power sources, allowing you to switch between utility operation and generator backup

Drives with predictive analytics help reduce maintenance costs and downtime by modeling the equipment's predicted life.

For example, an analytic model considers measured ambient temperature (sensors are built into drive modules) and measures equipment speed. Decreasing speed indicates that the bearings may be failing.

The predictive maintenance model gives a notification over a secure EtherNet/IP network to the control system when equipment has reached a certain percent of its predicted life – 80% by default. This alerts the maintenance team to replace the equipment during the next scheduled outage, avoiding unplanned downtime.

Expand predictive maintenance to your plant

By combining FactoryTalk®Analytics™ GuardianAl™ with PowerFlex 755T-series VFDs, you can get an unprecedented view into the health of your plant assets.

This solution continuously monitors variable frequency drives and plant assets and alerts you to problems before they occur, giving you more time to plan and act. With actionable insights, you can reduce risk, optimize maintenance plans and keep applications running more reliably.

- Predict and identify failures of your pump, fan or blower
- Analyze live electrical signal data from your existing PowerFlex 755T-series VFDs, at high speeds right at the edge without the overhead of cloud infrastructure
- Get notifications of flow restrictions, cavitation, loose mounting, blade misalignments, bearing faults, etc.

Energy savings you can count on... this technology delivers results

Energy payback in as little as 6 months

Energy consumption is one of the biggest operating costs in manufacturing. And industrial motor operation can be responsible for more than 50% of industrial energy use.

Reduce this top operating cost by taking advantage of energy-saving features in PowerFlex drives.

- Energy Pause disconnects 3-phase power on command, placing the drives in a low-energy state when a process isn't running, conserving energy. When you're ready to resume production, do it quickly.
- Economizer mode provides another opportunity for energy savings. When steady-state speed is achieved, activate this mode to automatically adjust the drive output voltage based on the applied load.
- PowerFlex drives support a wide variety of motors including permanent magnet motors that can improve energy efficiency by reducing the motor size while maintaining the same output torque.
- Drives with active front end technology have regenerative capability to put energy onto the incoming power supply. Harmonic mitigation and power factory correction reduce energy use.

FactoryTalk Energy Manager includes prebuilt energy performance dashboards that help identify energy intensity, consumption, demand, and cost. Monitor your assets, aggregate and contextualize energy data from your drives, and analyze opportunities for improved performance in real-time.

PowerFlex 755TS drives improve application performance and lowers energy use

per IEC 61800-9-2, IE2 EcoDesign directive



Sustainable lifecycle services

At Rockwell Automation, we provide customers with more reliable power control products that can be repaired and reintroduced to service many times. PowerFlex drives with TotalFORCE technology have built-in predictive maintenance capabilities that allow proactive measures to optimize the cost and frequency of maintenance activities. In the event you need repair, our Remanufacturing Services provide an environmentally friendly option, with quality and sustainability incorporated into every step. Prolonging the value of your assets is just one way we help industry transform in a way that is resilient and sustainable. Learn more at **rok.auto/sustainability**.

Safety solutions that improve productivity

Safety is priority one

Implementing safety solutions no longer means sacrificing productivity. Today, with the PowerFlex 755T-series drives you can address this concern with the safety option that best fits your needs to help protect your people and equipment while also helping to reduce downtime.

Add precious minutes back to production, reduce system wiring and components, and gain more insights into your operations by integrating controller-based safety functions on an EtherNet/IP network.

Reduce downtime while enhancing safety

Lockout/Tagout (LOTO) is a core element of industrial safety but can constrain productivity. Integrated safety lets you use safety functions in place of LOTO procedures in certain instances. Safety functions — such as safe limited speed, safe torque off and safe brake control — can help workers service equipment in a fraction of the time and still meet compliance requirements, while reducing unwanted behaviors of bypassing safety procedures.

Simplify wiring and reduce hardware

Traditional safety products are hardwired separately from a standard controller and can require extra hardware like safety relays. PowerFlex drives with integrated safety can share the same EtherNet/IP network as a standard controller and reduce the need for added hardware. This can help simplify your system architecture and reduce costs. Networked safety and control products also can be programmed, configured and maintained in one software environment, further reducing complexity.

Get better insights to optimize safety

PowerFlex drives with integrated safety can give you access to rich analytics to help improve your performance. Track the time, location, frequency and duration of when the drive's safety functions are used. This can help you better track safetyrelated downtime and identify changes to improve uptime. Drive diagnostics can also help you see where safety-related failures occur to speed up troubleshooting and recovery.

Helps reduce the risk of cyber attacks

Increase security for your smart machines, network and manufacturing equipment.

CIP Security-enabled devices, like PowerFlex 755T-series drives, help improve the security of your plant and minimize the risk of cyber incidents. CIP Security provides a secure transport layer in an EtherNet/IP network to help protect the drives from malicious communications. CIP Security provides:

- Trusted connections to help prevent unauthorized devices from establishing communications
- Integrity to help prevent tampering or modification of communications
- Encryption to help prevent disclosure of data



Improved protection in harsh environments

Your defense against corrosive gases

Reduce threat of early equipment failure from corrosion with PowerFlex drives with XT corrosive gas protection.

We've researched this widespread industry challenge to understand it better than anyone.

From our research, we developed solutions and recommendations that are helping manufacturers combat the effects of corrosion on VFDs in their plants. We call this XT.

Using Rockwell Automation proprietary research, testing, product design and installation instructions, PowerFlex drives with XT corrosive gas protection help reduce downtime that's related to premature equipment failure due to corrosion in extreme environments caused by caustic gas. Now available standard on all PowerFlex 755TL, TR and TM drives, and as an option for PowerFlex 755TS drives.



Is your industry at higher risk?

We have found many industrial environments have levels of atmospheric corrosion severity that contribute to premature failures of industrial control products.

Miniaturization of components, tighter spacing between components, and newer generation power dense products that require a higher rate of airflow, all combine to increase the risk of premature failure due to atmospheric corrosion.

Some examples of industries where higher corrosion severity has been observed include:

- Tire and rubber manufacturing
- Pulp and paper processing
- Oil and petroleum refining
- Mining
- Metal foundries
- Chemical manufacturing
- Water / wastewater treatment plants
- Animal confinement areas
- Meat packing plants
- Rendering plants for animal products
- Grain processing

We can help you test the reactivity in your environment to determine if XT corrosive gas solutions could help reduce unplanned downtime in your plant.



PowerFlex 755TS drives,

the smart motor control decision

Gain performance that gives you an advantage

The PowerFlex 755TS drive can be applied throughout your plant from traditional VFD applications to more advanced motor control applications that require highperformance motor control for precise speed, torque and positioning. It is the first standard industrial sixpulse drive to offer TotalFORCE[®] technology.

Designed for countless applications and industries, the PowerFlex 755TS drive helps deliver the productivity and throughput you need.

Help boost productivity and uptime with:

- High-performance motor control with more precise velocity, torque and positioning
- Simplified equipment maintenance and service with patented predictive maintenance technology
- Real-time device data for fast decision making at the plant level and that's accessible to cloud-based analytical engines
- Adaptive control features enable faster machine startup and increased machine reliability and performance
- Integrated networked and hardwired safety enables cost-effective machine safety implementation

- A common software and hardware experience that reduces complexity and training
- Multiple motor type support induction, permanent magnet and synchronous reluctance
- Built-in dual port Gigabit EtherNet, 1000 MB 10x higher throughput when compared to 10/100
- DeviceLogix[™] integrated logic-solving capability for applications that require a quick and localized response to input events
- T-Link option card for fiber optic high-speed driveto-drive communication
- CIP Security for secure communications, ensuring authorization, integrity and privacy between trusted devices
- XT corrosive gas protection option helps improve uptime and reduce corrosion in caustic gas environments
- 1...500 Hp / 0.75...355 kW
- -20...60°C operating temp (-20...50°C without derate)

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• Enclosure options: IP54, flange

Save space with higher power density solutions Wall-mounted drives **up to 500 Hp / 355 kW** provide more design flexibility and lower installation costs.

PowerFlex 755TL & 755TR drives help boost productivity

Nobody delivers a broader suite of smart solutions

With operating data and process control status at your fingertips, it can make the difference between profit and loss.

The family of PowerFlex 755T drives can help boost productivity, lower costs and improve performance from your process control system.

PowerFlex 755TL and 755TR drives provide built-in harmonic mitigation and power factor correction through the use of active front end technology. By reducing the adverse effects of harmonic distortion, the drives help to improve energy efficiency, reduce energy costs and minimize power distribution issues on the factory floor.

Using built-in regeneration, PowerFlex 755TR drives also help reduce energy consumption by delivering energy back to the incoming power supply.

Benefits of harmonic mitigation

- Lower harmonics and power factor correction reduces the need to oversize your electrical power equipment
- Reduced harmonic distortion helps minimize disruption to other devices
- Helps your system meet the IEEE 519 standard (5% or less of total harmonic distortion)

Benefits of regeneration

- The drive can put energy back on the incoming power supply, and is far more energy efficient than resistive or mechanical braking
- Eliminate the need for braking resistors and cooling equipment along with wiring, labor, installation and maintenance costs

More benefits

Built-in components reduce the need for any additional external equipment, helping to decrease floor space requirements.

- Maintain operation through most line disturbances with power loss ride-through control
- Configure and program the converter and inverter using Studio 5000 Logix Designer[®] or Connected Components Workbench[™] software
- Standard dual EtherNet/IP ports provide topology flexibility and Premier Integration into the Logix environment
- Advanced diagnostics and predictive maintenance to help increase performance and uptime, decrease commissioning time
- PowerFlex 755TL and TR drives come standard with XT corrosive gas protection

A wall mount liquid cooled option is available for PowerFlex 755TR drives 300 Hp (223 kW). For applications with readily accessible chillers, liquid cooling redirects heat outside of the drive enclosure or control room through liquid cooling loops, reducing air conditioning requirements and the drive's footprint.

Looking for an "out of the box" solution?

PowerFlex 755TL, TR and TM drives can be ordered and delivered to meet your specific packaging needs:

- Input circuit breaker and/or fuses
- Door-mounted pushbuttons and selector switches
- Optional door-mounted HIM
- Output contactor and/or output filter
- Communication options
- I/O options
- Voltage sensing and infrared viewing windows

With Advisor, you can easily configure a custom motor control solution and receive specifications and initial pricing in minutes. **Start designing now >**

PowerFlex 755TM common bus systems

optimize system design and power consumption

Agile operating systems help increase productivity and so much more

Select from a series of predesigned configurations for regenerative common bus supplies and common bus inverters to optimize your system design and power consumption. A common bus drive system offers design flexibility, energy optimization and reduced installation costs. Plus, the PowerFlex 755TM offers harmonic mitigation and built-in regeneration capability.

PowerFlex 755TM benefits

- Gain energy efficiency with motors that share energy between regenerating and motoring loads
- Optimize floor space, simplify installation and reduce hardware with drives connected to a common DC bus
 - Removes the need to wire AC power to each drive individually
 - Reduces installation time, labor and cabling costs
 - DC bus terminals built into each unit allow for easy connection to adjacent units
 - Drives feature an integrated control bus in each unit for efficient distribution of auxiliary power throughout a cabinet line up
 - PowerFlex 755TM drives come standard with XT corrosive gas protection

- Common bus systems enable a mixed architecture that allows connection of different types of VFDs, servo drives and other power components to the same DC bus
- Designed to enable coordination of multiple motors
 - Helps your system to meet the IEEE 519 standard (5% of less of total harmonic distortion)
 - Reducing harmonic distortion helps improve energy efficiency and minimize power distribution issues on the factory floor
 - Helps eliminate the need for auto-transformers or filters along with the associated wiring, labor, space, installation and maintenance costs

Non-regenerative supply

A cost-effective solution for a common bus, when regenerative and low harmonics are not required. This modular offering is scalable to meet your specific power requirements.

"The regeneration ability puts energy back on the incoming line, **providing a solution that is far more energy efficient than resistive braking."**

Service integration minimizes downtime

Combining advanced drive technology with modern support tools minimizes unplanned downtime and helps reduce maintenance costs.

- Troubleshoot quicker with online and virtual support options
- Maximize technology investments with integrated service offerings that provide priority support
- Empower your maintenance resources with access to data insights and augmented reality tools to optimize maintenance productivity, and with e-learning that fits your schedule
- Adopt new technology, build automation and control systems expertise

Technical specifications

	PowerFlex 755TS Drives	PowerFlex 755TL Drives	PowerFlex 755TR Drives	PowerFlex 755TM Common Bus Systems
Ratings 200/240V	0.5200 Hp	NA	NA	NA
Ratings 400V	0.75355 kW	7.51250 kW	7.53640 kW	Common Bus Inverter: 1603640 kW Regenerative Bus Supplies: 874358 kW
Ratings 480V	1500 Hp	101800 Hp	106000 Hp	Common Bus Inverter: 2506000 Hp Regenerative Bus Supplies: 904818 kW
Ratings 600V	1300 Hp	101500 Hp	105100 Hp	Common Bus Inverter: 2505100 Hp Regenerative Bus Supplies: 694432 kW
Ratings 690V	7.5250 kW	111400 kW	114550 kW	Common Bus Inverter: 2004550 kW Regenerative Bus Supplies: 844714 kW
Communications	Built-in dual-port Gigabit EtherNet/IP • ControlNet • DeviceNet • PROFIBUS DP PROFINET • Fiber optic drive-to-drive communication • CANopen BACnet MSTP (485) • Modbus RTU • RA DF-1			
Safety Options	Hardwired Safe Torque Off SIL3, PLe, CAT 3 • Networked Safe Torque Off SIL3, PLe, CAT 3 • Hardwired Safe Speed Monitor SIL3, PLe, CAT 4 • Networked Integrated Safety Functions SIL3 and PLe, CAT 4			
Ambient Temperature Ratings	-2050 °C ambient without derating -2060 °C with derate	-2040 °C ambient without derating -2055 °C with derate		
Storage Temperature	-4070 °C			
Relative Humidity	Operation: 095% non-condensing			
TotalFORCE Technology Motor Control	Sensorless vector • Flux vector control • Volts per Hertz • Economizer • Field-oriented control • Permanent magnet motor control • Synchronous reluctance			
Motor Control Bandwidth*	Velocity Regulator Bandwidth 300 Hz (1885 Radians per second) Position Regulator Bandwidth 207 Hz (1301 Radians per second)			
Standards and Certifications	c-UL-us • CE • EAC • KCC • RCM • RoHS • Seismic For a complete list, go to: rok.auto/powerflex-755t-certifications			
Torque Accuracy	2% of rated torque down to 5% of motor base speed – with optional torque accuracy module 5% of rated torque below 5% of motor base speed			

* 3 dB Crossing (Closed Loop) specifications

The right expertise, at the right time.

Professional, managed and support services to help you automate, connect, protect and optimize your value chain.



PRODUCTION AUTOMATION

Automate and modernize manufacturing and production operations.

- Industrial automation control systems
- Distributed control systems (DCS)
- Power systems
- Drive systems
- Safety systems & solutions
- Panel solutions







DIGITAL OPERATIONS

Connect processes, systems, assets and products with data.

- Data science & artificial intelligence (AI)
- Manufacturing operations management (MOM/MES)
- Product lifecycle management (PLM)
- Extended reality (AR/VR/MR)
- Supply chain management (SCM)

INDUSTRIAL CYBERSECURITY

Enable and protect industrial network connectivity.

- Industrial compute & network infrastructure
- Vulnerability & risk management
- Threat detection
- Endpoint protection
- Incident response & recovery

PRODUCTION OPTIMIZATION

Optimize the performance of assets, systems, applications and people.

- Repair & maintenance
- Inventory management
- Energy management & sustainability
- Workforce development & training



To learn how we can help you solve your unique business challenges, contact your local authorized Allen-Bradley® distributor or Rockwell Automation sales office, or visit: **rok.auto/lifecycle.**



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AMERICAS: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000 EUROPE/MIDDLE EAST/AFRICA: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2663 0600 ASIA PACIFIC: Rockwell Automation SEA Pte Ltd, 2 Corporation Road, #04-05, Main Lobby, Corporation Place, Singapore 618494, Tel: (65) 6510 6608 UNITED KINGDOM: Rockwell Automation Ltd., Pitfield, Kiln Farm, Milton Keynes, MK11 3DR, United Kingdom, Tel: (44)(1908) 838-800

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